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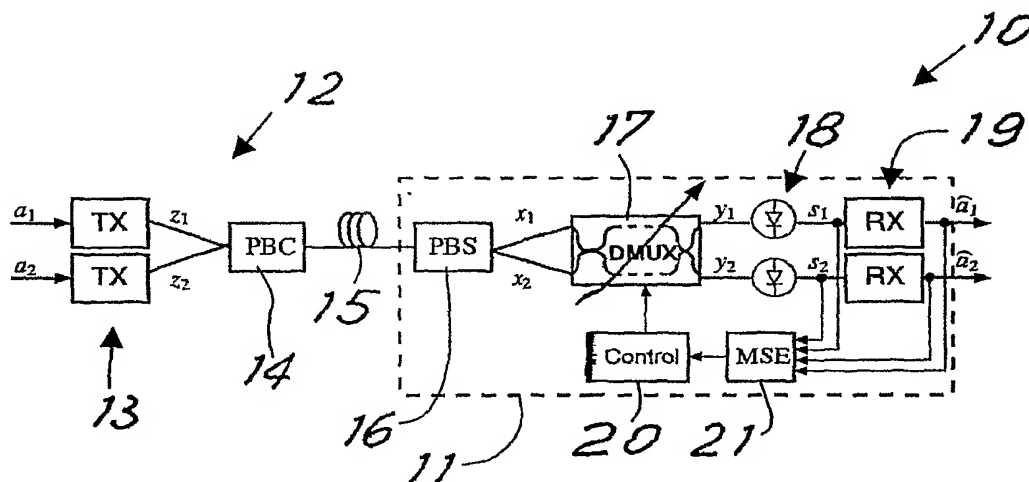
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(54) Title: SYSTEM, METHOD AND APPARATUS FOR POLARIZATION MODE DISPERSION COMPENSATION AND DEMULTIPLEXING POLARIZATION MULTIPLEXED SIGNALS



(57) Abstract: A polarization multiplex transmission system (10) comprises two optical signals ( $z_1, z_2$ ) transmitted over the same optical fibre (15) at the same wavelength but with orthogonal polarizations. The system is characterised by receiving apparatus (10) which is operable to filter the two components with orthogonal polarization of the signal received in accordance with an appropriate transfer matrix which is dynamically controlled on the basis of the output signals in such a manner as to approximate the reverse transfer matrix of the fibre in the region of the spectrum occupied by the signal so as to compensate for Polarization Mode Dispersion (PMD) and polarization rotation introduced by the fibre and eliminating distortion and mutual interference effects for both the signals and thereby obtain a demultiplexed output corresponding to the two transmitted signals.